

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (currently amended) A method for crystallization or dopant activation heat treatment of a semiconductor film upon a thermally susceptible non-conducting substrate, comprising;

(a) ~~installing~~ disposing an induction coil in close proximity ~~of~~ to a semiconductor film on a non-conducting substrate lying onto a susceptor, ~~said induction coil being disposed so that~~ with the electrical current direction of the coil is aligned parallel to the in-plane direction of said semiconductor film;

(b) disposing a magnetic core around said induction coil to strengthen and concentrate a magnetic field generated by said coil onto said semiconductor film; and

~~(b)~~ (c) introducing an alternating electrical current in said induction coil to generate an alternating magnetic field through said semiconductor film heated by said susceptor to the extent that said semiconductor film can be induction-heated.

2. (previously amended) The method of claim 1 wherein said semiconductor film is an amorphous silicon film or a crystalline silicon film, and wherein said thermally susceptible non-conducting substrate is a glass or a plastic substrate.

3. (previously amended) The method of claim 2 wherein said silicon film is an amorphous film deposited onto said substrate for the purpose of crystallization, or a polycrystalline film ion-implanted with an n-type or a p-type dopant for the purpose

of electrical activation.

4. (previously amended) The method of claim 1 wherein the frequency of said alternating electrical current in said induction coil varies between 10 Hz and 10 MHz.

5. (previously amended) The method of claim 3 wherein said crystallization of amorphous silicon film is performed by solid phase crystallization, metal-induced crystallization, and/or metal-induced lateral crystallization.

6. (currently amended) An apparatus for heat treatment of a semiconductor film upon a thermally susceptible non-conducting substrate, comprising;

(a) an induction coil ~~installed~~ disposed in close proximity to a semiconductor film on a non-conducting substrate so that the electrical current direction of the coil is aligned parallel to the in-plane direction of said semiconductor film;

(b) a susceptor ~~installed~~ disposed below said non-conducting substrate to heat said semiconductor film to the extent that said semiconductor film can be induction-heated; and

(c) a magnetic core ~~installed~~ disposed around said induction coil to strengthen ~~the magnetic field at lower power and also allow the concentration of an alternating and~~ concentrate a magnetic flux generated by said coil onto in close proximity of said semiconductor film.

7. (previously amended) The apparatus of claim 6 wherein said semiconductor film is a silicon film deposited on said substrate, in the form of either amorphous state crystallizing into polycrystalline in the case of crystallization heat

treatment, or polycrystalline state implanted by an n type or a p type dopant in the case of dopant activation heat treatment.

8. (previously amended) The apparatus of claim 6 wherein said susceptor is made of metal or graphite with a high conductivity providing the *in-situ* heating capability to the susceptor under the alternating magnetic field through a heating mechanism of eddy currents.

9. (previously amended) The apparatus of claim 6 wherein said susceptor is made of an electrically non-conductive material for preventing the susceptor from being heated by an alternating magnetic field generated by said coil, and wherein said susceptor is designed to be independently heated using an external heat source such as a resistance heater or a lamp heater.

10. (new) The apparatus of claim 6, wherein said magnetic core is made of magnetic metal or ferrite.